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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/089,312 06/02/98 FINDLATER

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EXAMINER

WM02/0523

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ART UNIT

PAPER NUMBER

2661

DATE MAILED:

05/23/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

GM

Office Action Summary

Application No.

09/089,312

Applicant(s)

FINDLATER ET AL.

Examiner

Anthony T. Ton

Art Unit

2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 1998 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

Art Unit: 2661

DETAILED ACTION

Drawing Objections

1. This application has been filed with informal drawings, which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.
2. The drawings are objected to because missing word "Prior Art" in Figure 1A, Figure 1B, and Figure 2, in which these figures are based on standard interfaces as indicating on the present specification.

Correction is required.

Claim Objections

3. Claim 12 is objected to because of the following informalities: "includes including" in line 2, it must be a typo; either one them should be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 15 and 16 are rejected under 35 U.S.C. 102(a) as being anticipated by RMII™ Consortium on March 20, 1998 per RMII™ Specification, Rev. 1.2 (the RMII™).

Regarding to Claim 15, the RMIITM disclose an interface between a first MAC and a second MAC (see connections from MII MAC I/F to RMII MAC I/F in Fig. 1) consisting essentially of:

- a time-division multiplexed receive data line (see RXD[3:0] in Fig. 1 for receive data line; and paragraph 6.0 Frame Structure for TDM);
- a time-division multiplexed receive control line (see RX_DV in Fig. 1 for receive control line; and paragraph 6.0 Frame Structure for TDM);
- a time-division multiplexed transmit data line (see TXD[3:0] in Fig. 1; and paragraph 6.0 Frame Structure for TDM); and
- a time-division multiplexed transmit control line (see TX_EN in Fig. 1 for transmit control line; and paragraph 6.0 Frame Structure for TDM).

Regarding to Claim 16, the RMIITM discloses a MAC to PHY interface (see connections between RMII MAC I/F and RMII PHY I/F in Fig. 1; and Para. 6.0) consisting essentially of:

- a common clock (see REF_CLK in Fig. 1);
- a time-division multiplexed receive data line (see RXD[1:0] in Fig. 1; and Figs. 2 and 3);
- a time-division multiplexed receive control line (see CRS_DV in Fig. 1; and Figs. 2 and 3);
- a time-division multiplexed transmit data line (see TXD[1:0] in Fig. 1; and Fig. 4); and

Art Unit: 2661

- a time-division multiplexed transmit control line (see TX_EN in Fig. 1; and Fig. 4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-6, and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over RMII™ Consortium on March 20, 1998 per RMII™ Specification, Rev.

1.2.

Regarding to Claim 1, the RMII™ discloses a method of communicating between a MAC and a PHY comprising:

- sending a 100 MHz time-division multiplexed signal on a receive data line (see RXD[0], RXD[1] in Fig. 2; and para. 6.0);
- sending a time-division multiplexed receive control signal on a receive control line (see CRS_DV in Fig. 2; and para. 6.0);
- sending a 100 MHz time-division multiplexed signal on a transmit data line (see TXD[0], TXD[1] in Fig. 4; and para. 6.0); and
- sending a time-division multiplexed transmit control signal on a transmit control line (see TX_EN in Fig. 4; and para. 6.0).

Regarding to Claim 4, the RMIITM teaches that wherein the time-division multiplexed receive control signal includes 4 bit segments and wherein each 4 bit segment includes a receive data valid bit (see CRS_DV in Fig. 2; and Para. 5.2).

Regarding to Claim 5, the RMIITM teaches that wherein the time-division multiplexed receive control signal includes 4 bit segments and wherein each 4 bit segment includes a receive error bit (see RX_ER* in Fig. 2; and Para. 5.3.3).

Regarding to Claim 6, the RMIITM teaches that wherein the time-division multiplexed receive control signal includes 4 bit segments and wherein each 4 bit segment includes a carrier sense bit (see CRS in Fig. 2; and lines 12-20 on Para. 3.0).

Regarding to Claim 9, the RMIITM teaches that wherein the time-division multiplexed transmit control signal includes 4 bit segments and wherein each 4 bit segment includes a transmit enable bit (see TX_EN in Fig. 2 and Para. 5.4).

Regarding to Claim 10, the RMIITM teaches that wherein the time-division multiplexed transmit control signal includes 4 bit segments and wherein each 4 bit segment includes a transmit error bit (see Para. 5.7).

Regarding to Claim 11, the RMIITM teaches that further including indicating the speed of the PHY using the receive data line (see lines 17-22 on Para 3.0).

Regarding to Claim 12, the RMIITM teaches that wherein indicating the speed of the PHY using the receive data line includes including an interface speed bit in a data segment when a receive control segment indicates no carrier sense, no receive data valid and no receive error (see lines 17-22 on Para 3.0).

Regarding to Claim 13, the RMIITM teaches that further including buffering data transmitted from the PHY to the MAC using an elasticity buffer that is at least 27 bits long (see the last paragraph of Para. 5.1).

Regarding to Claim 14, the RMIITM teaches that further including buffering data transmitted from the PHY to the MAC using an elasticity buffer that long enough to buffer an entire frame of data from a data source having a clock with a frequency tolerance of 0.1 % (see Para. 5.1; and line 9 on Para. 5.1 for the tolerance of the 50 MHz frequency).

The RMIITM differs from the above claims is that the RMIITM does not explicitly teach a clock frequency of 100 MHz for sending an 100 MHz time-division multiplexed signal on receive/transmit data lines and receive/transmit control lines.

However, the RMIITM explicitly teaches a clock frequency of 50 MHz for the purpose of minimizing Electromagnetic Interference (EMI) and IC I/O requirements (see item 1 in Para. 3.0 Design Goals and Trade-offs).

It would have been obvious to one ordinary skill in the art at the time of the invention was made would employ such a clock frequency of 100 MHz as taught by the RMIITM to the present invention, so that the number of pins incorporating between MAC and PHY interfaces can be reduced.

The motivation/suggestion to employ such a clock frequency of 100 MHz for sending an 100 MHz time-division multiplexed signal on receive/transmit data lines and receive/transmit control lines is suggested by the RMIITM in lines 7-9 on Para. 3.0 and Figs. 2-5.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over RMII™ Consortium on March 20, 1998, RMII™ Specification, Rev. 1.2 in view of Albrow et al. (U.S. Patent 5,987,023) (the Albrow).

Regarding to Claim 2, the RMII™ teaches that wherein the time-division multiplexed receive control signal includes 4 bit segments and wherein each 4 bit segment includes a synchronization bit (see CRS, RX_ER*, and CRS_DV in Fig. 2; and Para. 5.2).

Regarding to Claim 3, the RMII™ teaches that wherein the receive data line includes 4 bit segments and wherein the beginning of a 4 bit segment is determined by the synchronization bit (see RDX[3:0] in Fig. 2; and Para. 5.3).

Regarding to Claim 7, the RMII™ teaches that wherein the time-division multiplexed transmit control signal includes 4 bit segments and wherein each 4 bit segment includes a synchronization bit (see TX_EN in Fig. 2 and Para. 5.4).

Regarding to Claim 8, the RMII™ teaches that wherein the transmit data line includes 4 bit segments and wherein the beginning of a 4 bit segment is determined by the synchronization bit (see TXD[3:0] in Fig. 2 and Para. 5.5).

Art Unit: 2661

The RMII™ differs from the above claims is that the RMII™ does not explicitly teach a synchronous bit.

However, the Albrow explicitly teaches synchronous bits for the purpose of transmission timing control in digital radiotelephony (see Fig. 5b).

One ordinary skill in the art would have recognized the advantage of synchronous bits as taught by the Albrow to the RMII™ for the use of adaptive time alignment.

It would have been obvious to one ordinary skill in the art at the time of the invention was made would employ such synchronous bits, so that the adaptive time alignment can utilize to allow a guard period between normal up-link packets to be reduced by compensating for time delay in propagation.

The motivation/suggestion to employ such synchronous bits is suggested by the RMII™ in item 3 of Para. 3.0).

Response to Arguments

7. Applicant's arguments filed on March 22, 2001 with respect to Claims 1-16 have been considered but are moot in view of the new ground of rejection.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony T. Ton whose telephone number is (703) 306-5622. The examiner can normally be reached on Monday - Friday.

Art Unit: 2661

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Olms can be reached on (703) 305-4703. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-6071.

Auth

Anthony Ton
May 21, 2001



HUY D. VU
PRIMARY EXAMINER